REMARKS

This paper is filed in response to the Office Action mailed on September 18, 2006. Presently, Claims 1-9 are pending in the application. Of these, Claims 7-9 are withdrawn from consideration. Claims 1-6 have been examined and stand rejected. Applicant respectfully requests reconsideration of Claims 1-6.

The Rejection of Claims 1-6 Under 35 U.S.C. § 103(a)

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over KR1020030072855 (Lee) in view of U.S. Patent No. 7,008,867 (Lei).

Claim 1 has been amended to recite several features that are not disclosed by Lee or Lei, either alone or in combination.

For example, in Claim 1, after the photosensitive material is exposed to light, it is developed to prepare a hole in a resist pattern for a bump pad (Fig. 3b). Then, a pulse plating layer is applied (Fig. 3c), followed by an electrolytic direct current copper layer (Fig. 3d), which is followed by removing the resist pattern and the electroless copper layer (Figs. 3e and 3f). The result is a bump pad having an electroless copper plated layer juxtaposed on an insulating layer, a pulse plated layer juxtaposed on the pulse plated layer, wherein the layers form the sidewalls of the bump pad. Pulse plating results in an average deposition rate increase. But the surface created by pulse plating is uneven. However, DC pulse plating, under the appropriate conditions, advantageously results in an even surface.

In Lei, there is only a single layer 22 deposited in the photoresist hole 20. (See Figure 1C). After the deposition of layer 22, the photoresist 20 is removed leaving only the column 22. (See Figure 1D.) Accordingly, Lei fails to teach at least step (c) of Claim 1. Furthermore, Lei adds subsequent protective layers of gold (Au) and nickel (Ni), layer 24A and layer 24B, onto the copper column 22. The layer 24B forms the sidewalls and top of the copper column 22, which is not similar to step (d) of Claim 1. For example, compare Figure 1E of Lei with FIGURE 3e of the present specification.

Claims 2, 4, and 5 depend from Claim 1. Accordingly, the withdrawal of the rejection is respectfully requested.

The Rejection of Claims 3 and 6 Under 35 U.S.C. § 103(a)

Claims 3 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al., in view of Lei as applied to Claim 1 above, and further in view of U.S. Patent No. 5,519,177 (Wang et al.). The Lei patent describes a method of forming an antioxidation surface for a copper bump pad (see Abstract). Contrary to the Office Action, the Wang et al.

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patent does not disclose a bump pad or a flip chip. Wang et al. is therefore irrelevant to both the claims and Lei as far as providing a suggestion or motivation. Furthermore, the Examiner states that insulating layer 2 is subjected to electroless copper plating. However, Wang teaches that layer 2 is, in fact, an adhesive layer (see Example 1). Accordingly, there is nothing to teach or suggest the combination of Wang et al. with Lei. Furthermore, since Claims 3 and 6 depend from Claim 1, these claims are allowable for this reason alone.

Accordingly, the withdrawal of the rejection of Claims 3 and 6 is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, applicant submits that Claims 1-6 are in condition for allowance. If the Examiner has any further questions or comments, the Examiner may contact the applicant's attorney at the number set forth below.

Respectfully submitted,

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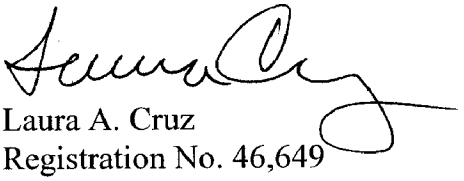

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